FIG.1

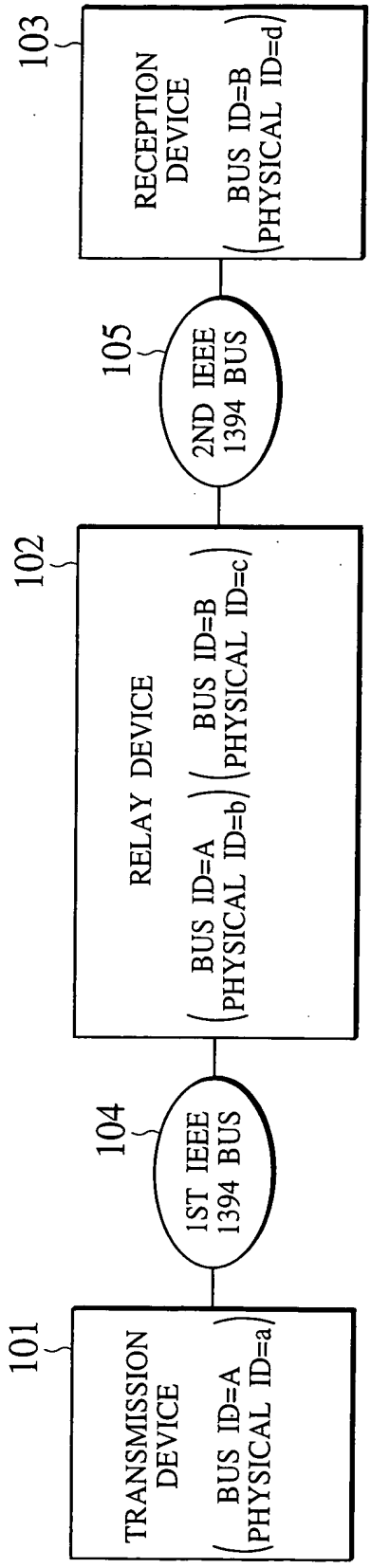
101
TRANSMISSION DEVICE
BUS ID=A
PHYSICAL ID=a
104
1ST IEEE 1394 BUS
102
RELAY DEVICE
BUS ID=A
PHYSICAL ID=b
BUS ID=B
PHYSICAL ID=c
105
2ND IEEE 1394 BUS
103
RECEPTION DEVICE
BUS ID=B
PHYSICAL ID=d

FIG.2

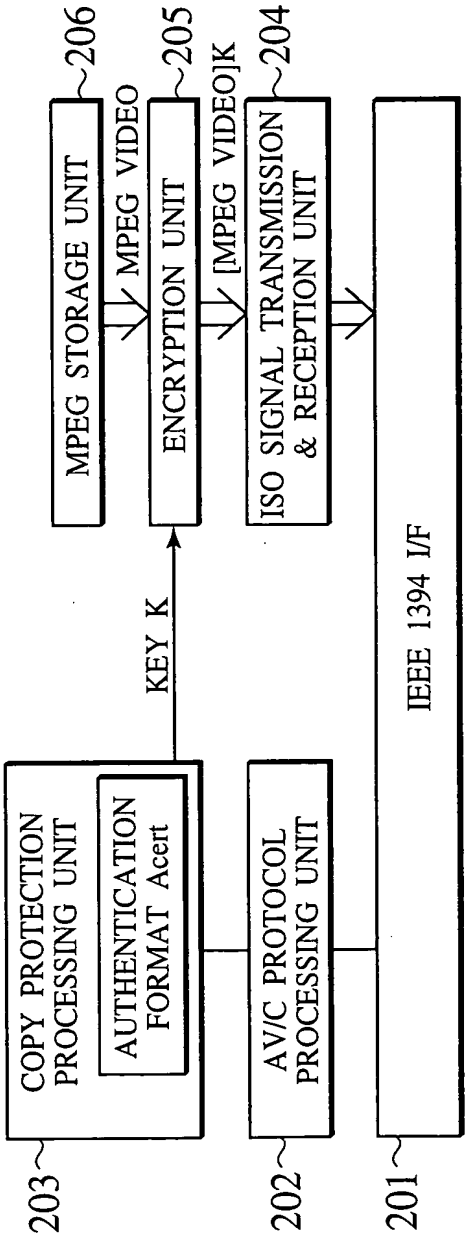
206
MPEG STORAGE UNIT
MPEG VIDEO
205
ENCRYPTION UNIT
[MPEG VIDEO]K
204
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
IEEE 1394 I/F
KEY K
COPY PROTECTION PROCESSING UNIT
AUTHENTICATION FORMAT Acert
AV/C PROTOCOL PROCESSING UNIT
203
202
201

FIG.3

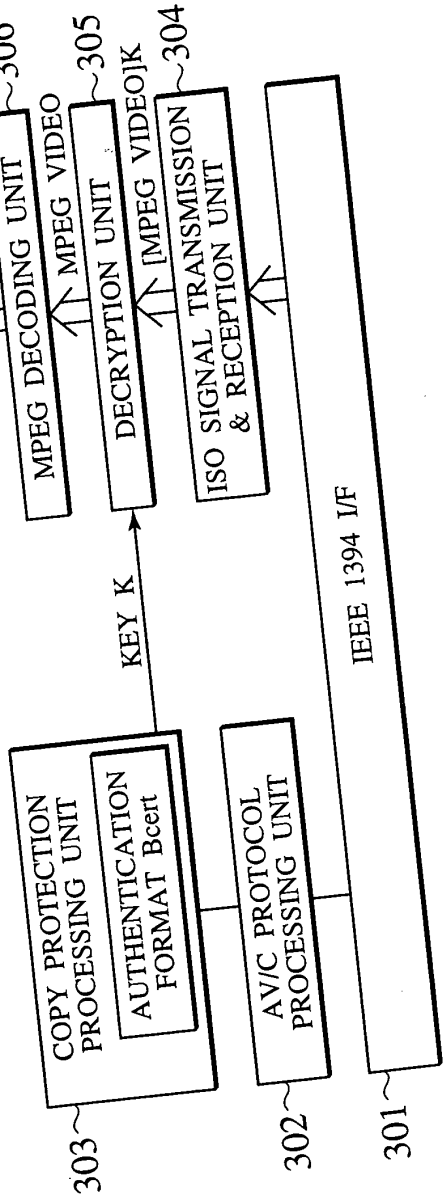
307
306
305
304
DISPLAY UNIT
VIDEO
MPEG DECODING UNIT
MPEG VIDEO
DECRYPTION UNIT
[MPEG VIDEO]K
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
KEY K
IEEE 1394 I/F
COPY PROTECTION PROCESSING UNIT
AUTHENTICATION FORMAT Bcert
AV/C PROTOCOL PROCESSING UNIT
303
302
301

FIG.4

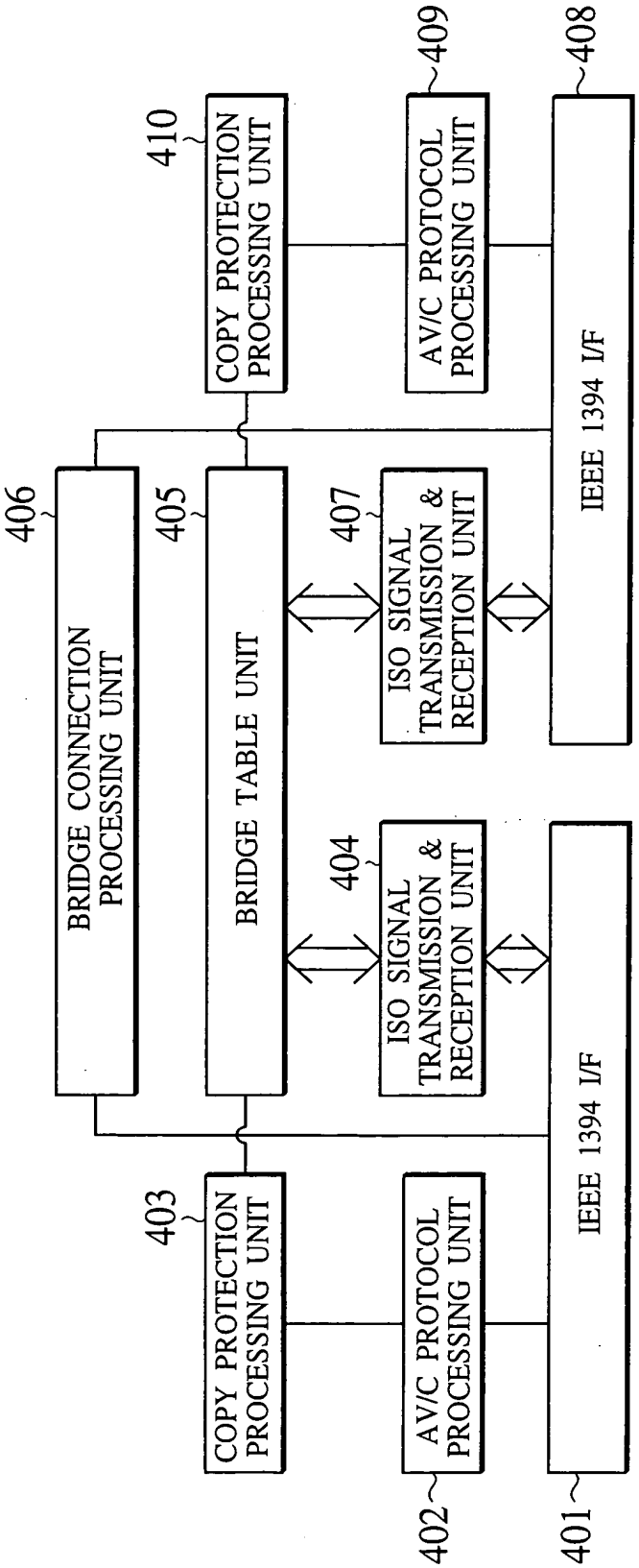
BRIDGE CONNECTION PROCESSING UNIT
406
BRIDGE TABLE UNIT
405
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
407
IEEE 1394 I/F
408
COPY PROTECTION PROCESSING UNIT
410
AV/C PROTOCOL PROCESSING UNIT
409
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
404
IEEE 1394 I/F
401
COPY PROTECTION PROCESSING UNIT
403
AV/C PROTOCOL PROCESSING UNIT
402

FIG.5A

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| | SENDER | |
| | AUTHENTICATION TARGET | |

FIG.5B

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| (A,a) | SENDER | THIS DEVICE |
| | AUTHENTICATION TARGET | |

FIG.5C

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| (A,a) | SENDER | THIS DEVICE |
| | AUTHENTICATION TARGET | (B,d),iPCR[0] |

FIG.5D

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| (A,a) | SENDER | THIS DEVICE |
| (A,a),oPCR[0] | AUTHENTICATION TARGET | (B,d),iPCR[0] |

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# FIG.6

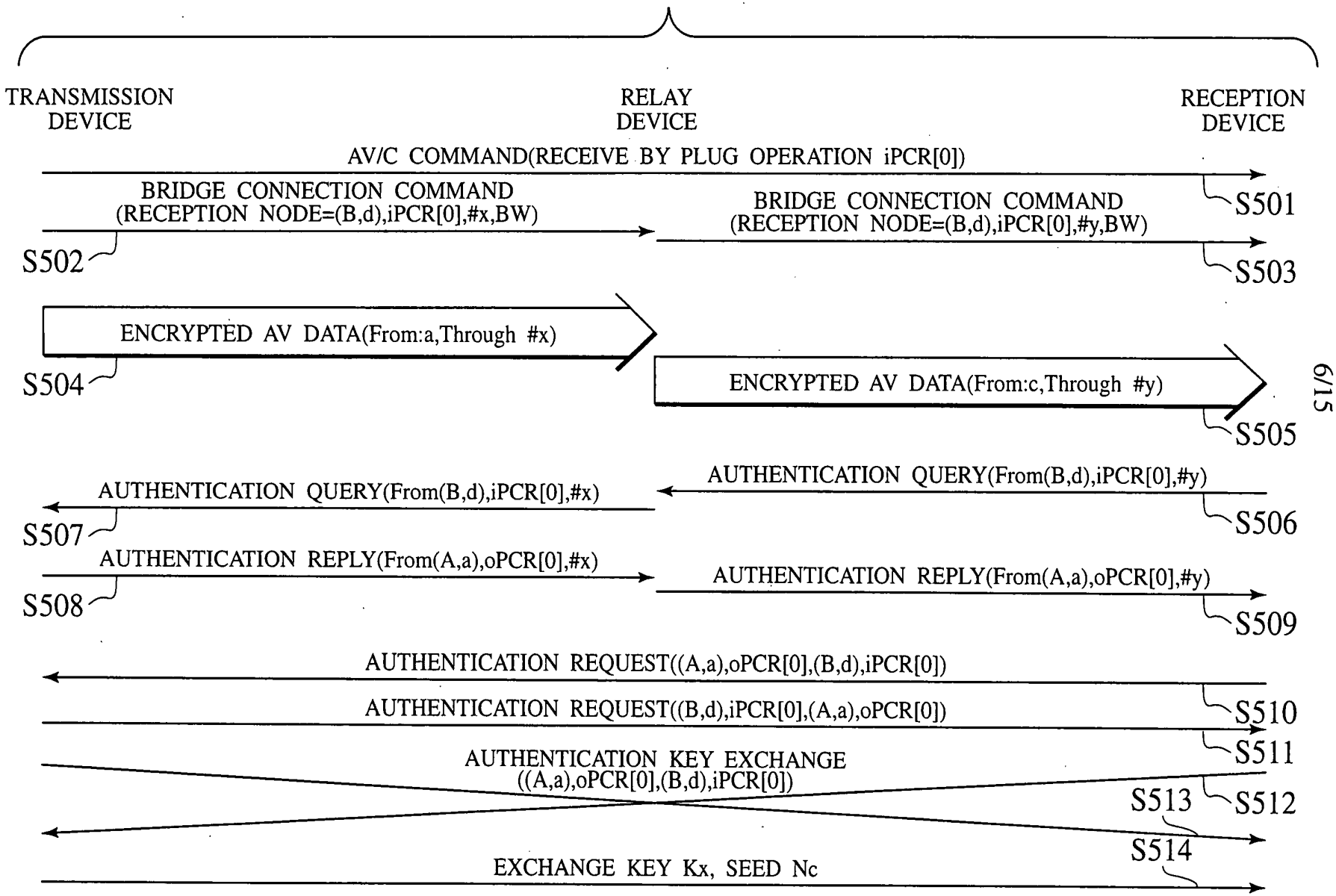




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FIG.7

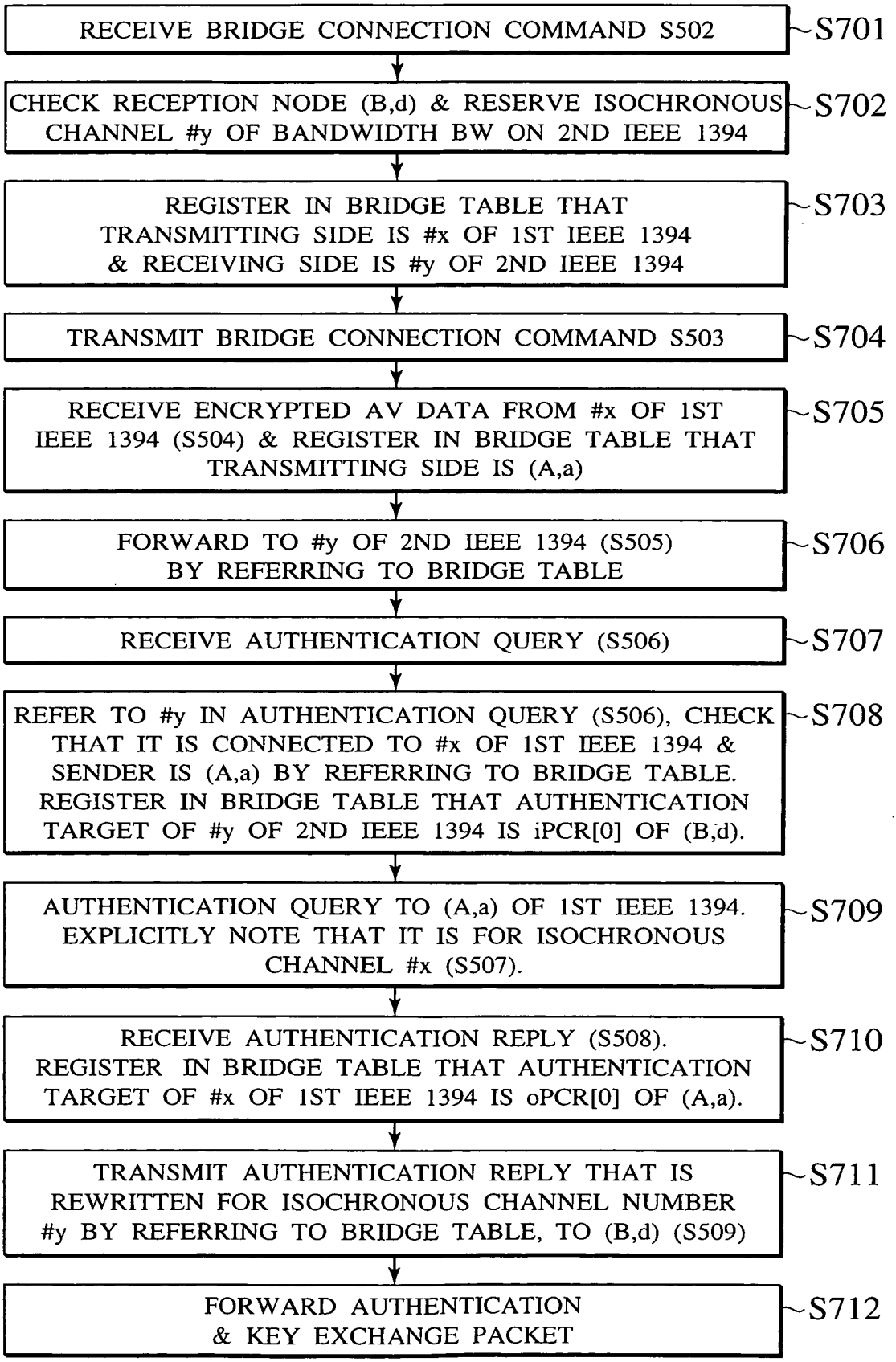
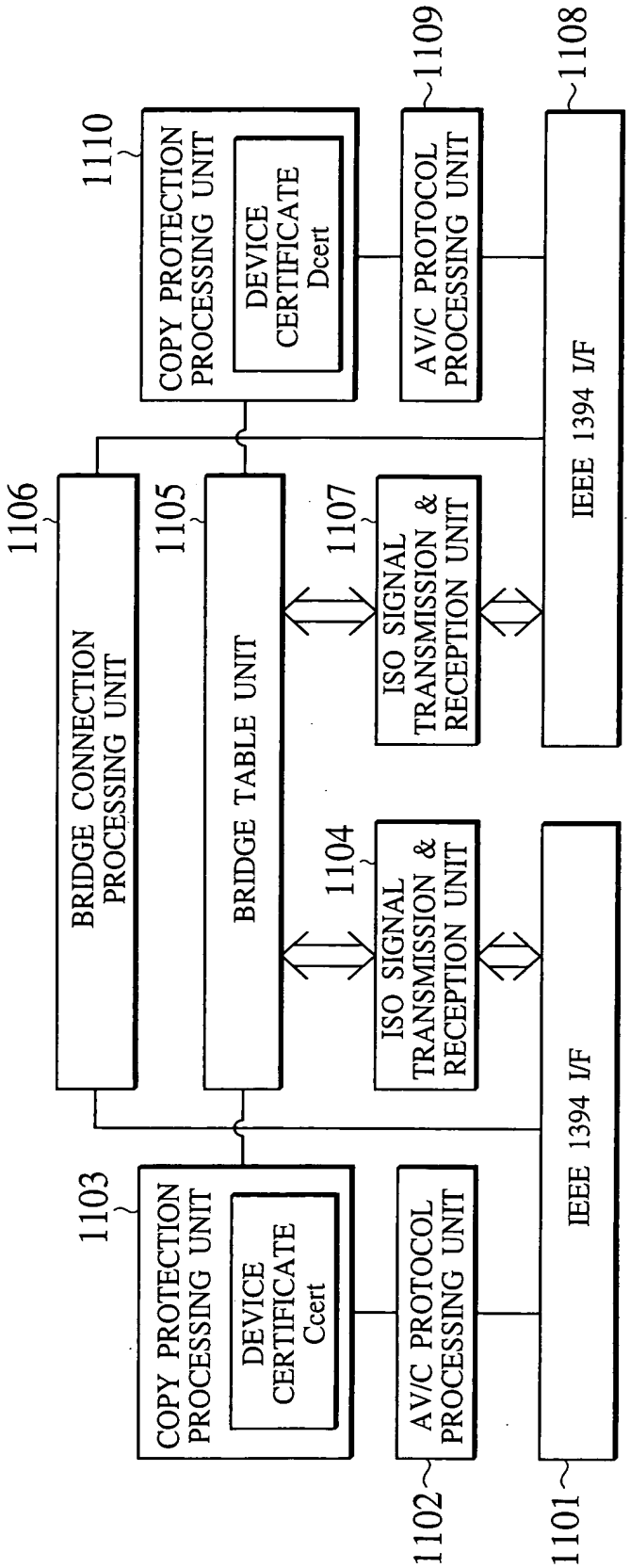

RECEIVE BRIDGE CONNECTION COMMAND S502
S701
CHECK RECEPTION NODE (B,d) & RESERVE ISOCHRONOUS CHANNEL #y OF BANDWIDTH BW ON 2ND IEEE 1394
S702
REGISTER IN BRIDGE TABLE THAT TRANSMITTING SIDE IS #x OF 1ST IEEE 1394 & RECEIVING SIDE IS #y OF 2ND IEEE 1394
S703
TRANSMIT BRIDGE CONNECTION COMMAND S503
S704
RECEIVE ENCRYPTED AV DATA FROM #x OF 1ST IEEE 1394 (S504) & REGISTER IN BRIDGE TABLE THAT TRANSMITTING SIDE IS (A,a)
S705
FORWARD TO #y OF 2ND IEEE 1394 (S505) BY REFERRING TO BRIDGE TABLE
S706
RECEIVE AUTHENTICATION QUERY (S506)
S707
REFER TO #y IN AUTHENTICATION QUERY (S506), CHECK THAT IT IS CONNECTED TO #x OF 1ST IEEE 1394 & SENDER IS (A,a) BY REFERRING TO BRIDGE TABLE. REGISTER IN BRIDGE TABLE THAT AUTHENTICATION TARGET OF #y OF 2ND IEEE 1394 IS iPCR[0] OF (B,d).
S708
AUTHENTICATION QUERY TO (A,a) OF 1ST IEEE 1394. EXPLICITLY NOTE THAT IT IS FOR ISOCHRONOUS CHANNEL #x (S507).
S709
RECEIVE AUTHENTICATION REPLY (S508). REGISTER IN BRIDGE TABLE THAT AUTHENTICATION TARGET OF #x OF 1ST IEEE 1394 IS oPCR[0] OF (A,a).
S710
TRANSMIT AUTHENTICATION REPLY THAT IS REWRITTEN FOR ISOCHRONOUS CHANNEL NUMBER #y BY REFERRING TO BRIDGE TABLE, TO (B,d) (S509)
S711
FORWARD AUTHENTICATION & KEY EXCHANGE PACKET
S712

FIG.8


1101
IEEE 1394 I/F
1102
AV/C PROTOCOL PROCESSING UNIT
1103
COPY PROTECTION PROCESSING UNIT
DEVICE CERTIFICATE Ccert
1104
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
1105
BRIDGE TABLE UNIT
1106
BRIDGE CONNECTION PROCESSING UNIT
1107
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
1108
IEEE 1394 I/F
1109
AV/C PROTOCOL PROCESSING UNIT
1110
COPY PROTECTION PROCESSING UNIT
DEVICE CERTIFICATE Dcert

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# FIG.9

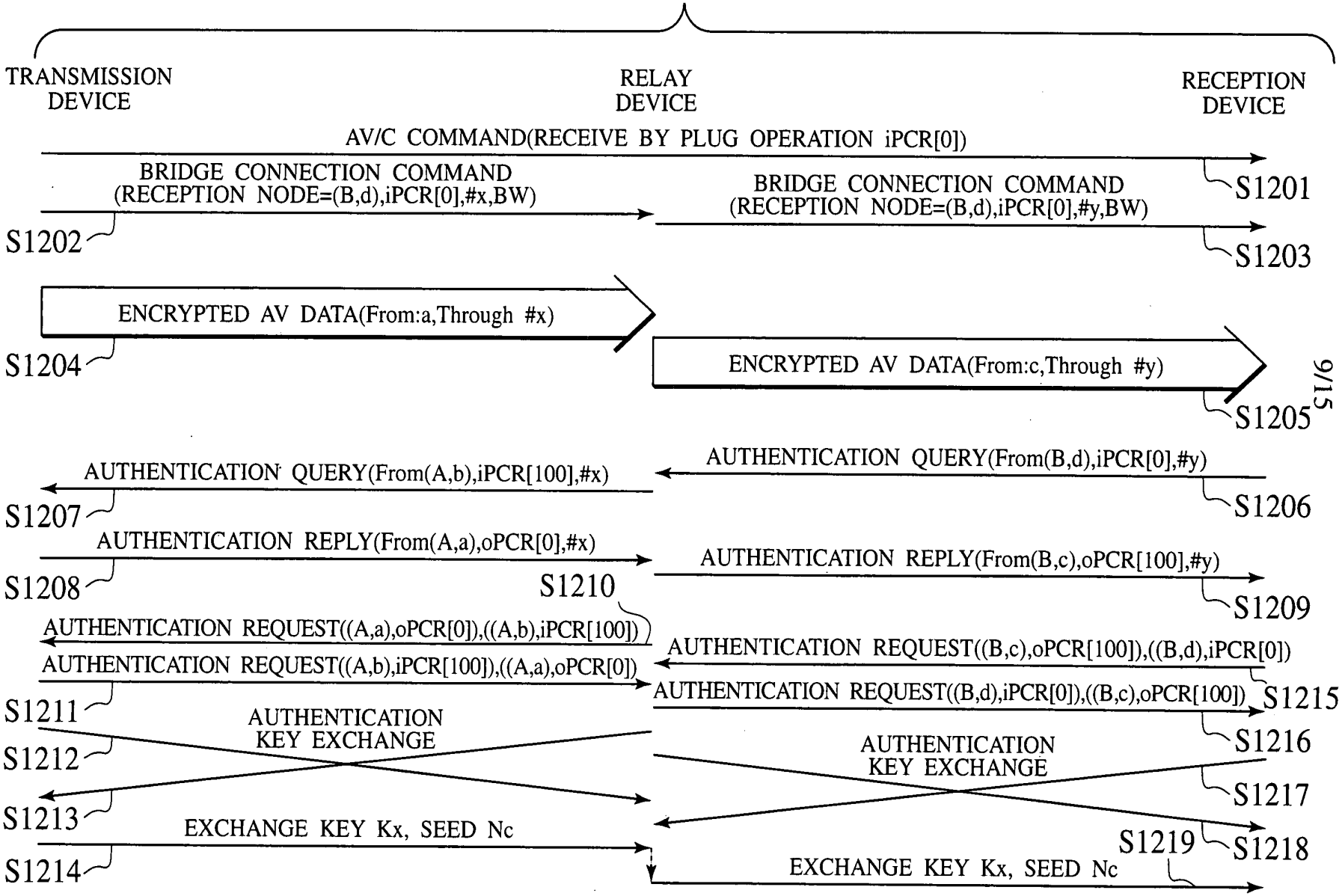




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FIG.10A

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| | SENDER | |
| | VIRTUAL PLUG OF THIS DEVICE | |
| | AUTHENTICATION TARGET | |

FIG.10B

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| (A,a) | SENDER | THIS DEVICE |
| | VIRTUAL PLUG OF THIS DEVICE | |
| | AUTHENTICATION TARGET | |

FIG.10C

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| (A,a) | SENDER | THIS DEVICE |
| iPCR[100] | VIRTUAL PLUG OF THIS DEVICE | |
| | AUTHENTICATION TARGET | (B,d),iPCR[0] |

FIG.10D

| 1ST IEEE 1394 SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| (A,a) | SENDER | THIS DEVICE |
| iPCR[100] | VIRTUAL PLUG OF THIS DEVICE | oPCR[100] |
| (A,a),oPCR[0] | AUTHENTICATION TARGET | (B,d),iPCR[0] |

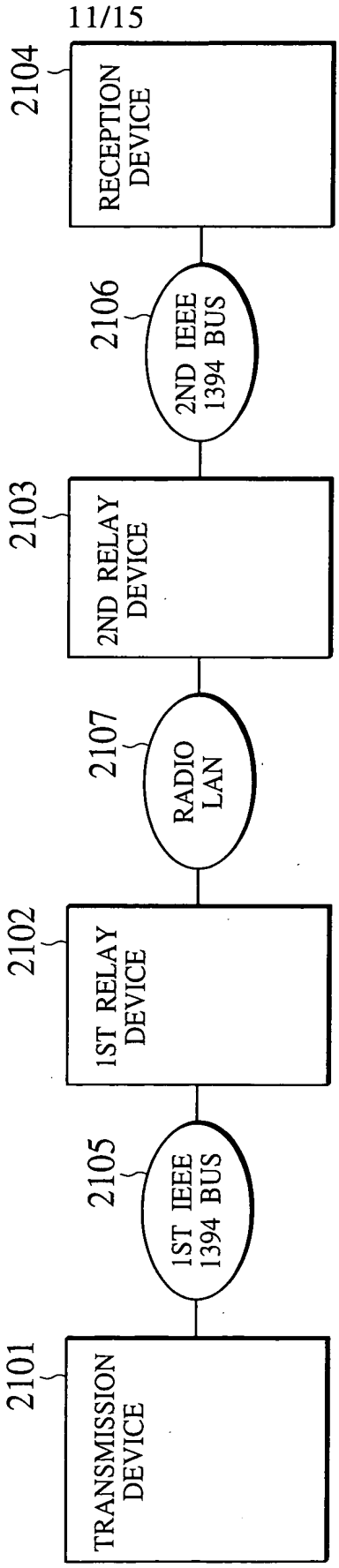


FIG.11

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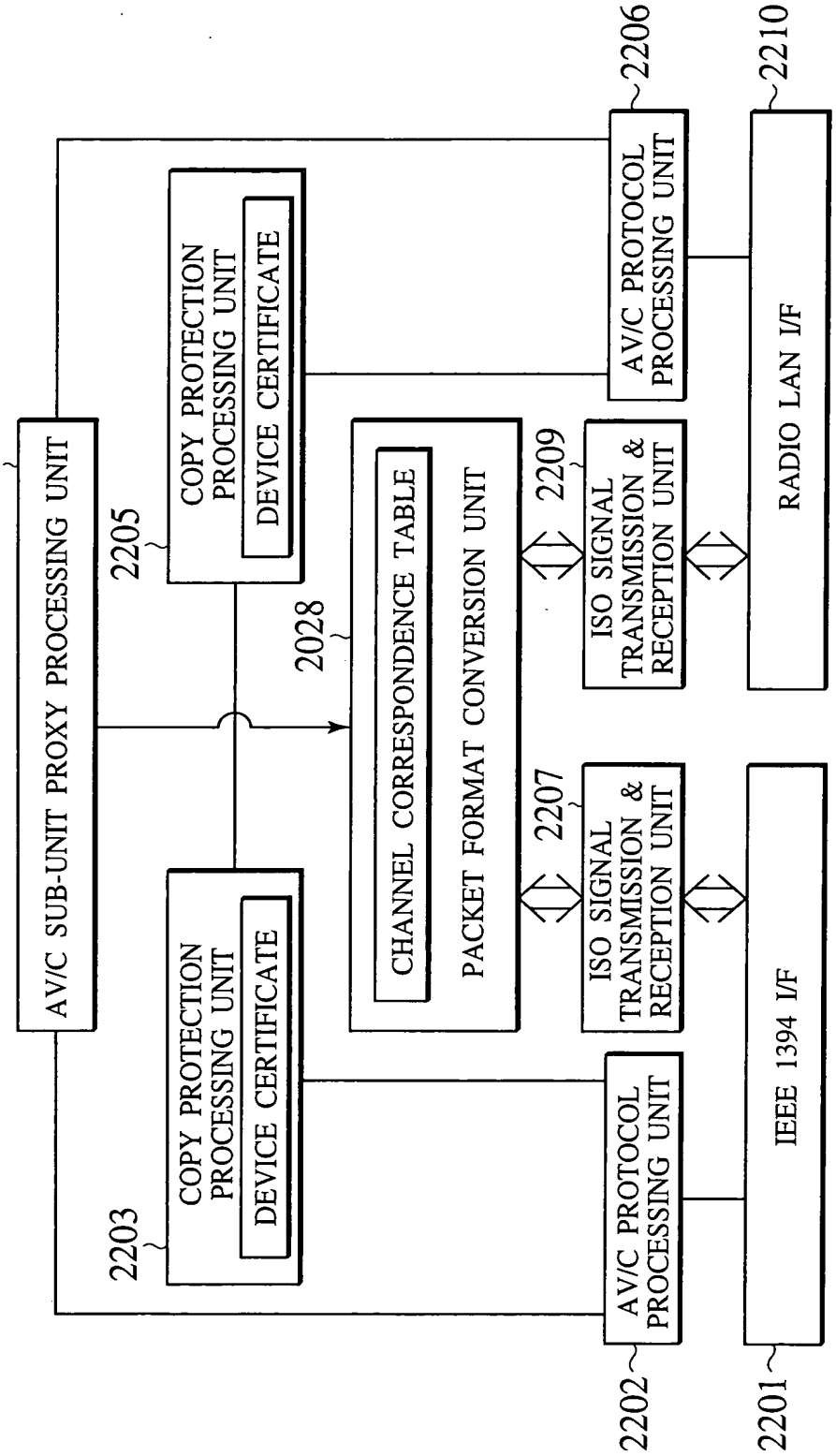
FIG.12


2204
AV/C SUB-UNIT PROXY PROCESSING UNIT
2205
COPY PROTECTION PROCESSING UNIT
DEVICE CERTIFICATE
2028
CHANNEL CORRESPONDENCE TABLE
PACKET FORMAT CONVERSION UNIT
2209
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
2206
AV/C PROTOCOL PROCESSING UNIT
2210
RADIO LAN I/F
2203
COPY PROTECTION PROCESSING UNIT
DEVICE CERTIFICATE
2207
ISO SIGNAL TRANSMISSION & RECEPTION UNIT
2202
AV/C PROTOCOL PROCESSING UNIT
2201
IEEE 1394 I/F

# FIG.13

| 1ST IEEE 1394 SIDE | | RADIO LAN SIDE |
|---|---|---|
| #x | ISOCHRONOUS CHANNEL NUMBER | #y |
| TRANSMITTING SIDE | TRANSMISSION/ DIRECTION DIRECTION | RECEIVING SIDE |
| TRANSMISSION DEVICE | SENDER | oPCR[0] OF THIS DEVICE |
| TRANSMISSION DEVICE | AUTHENTICATION TARGET | iPCR[0] OF 2ND RELAY DEVICE |
| THIS DEVICE | RECEIVER | iPCR[0] OF 2ND RELAY DEVICE |

# FIG.14

| RADIO LAN SIDE | | 2ND IEEE 1394 SIDE |
|---|---|---|
| #y | ISOCHRONOUS CHANNEL NUMBER | #z |
| TRANSMITTING SIDE | TRANSMISSION/ RECEPTION DIRECTION | RECEIVING SIDE |
| 1ST RELAY DEVICE | SENDER | THIS DEVICE |
| oPCR[0] OF 1ST RELAY DEVICE | AUTHENTICATION TARGET | RECEPTION DEVICE |
| iPCR[0] OF THIS DEVICE | RECEIVER | RECEPTION DEVICE |

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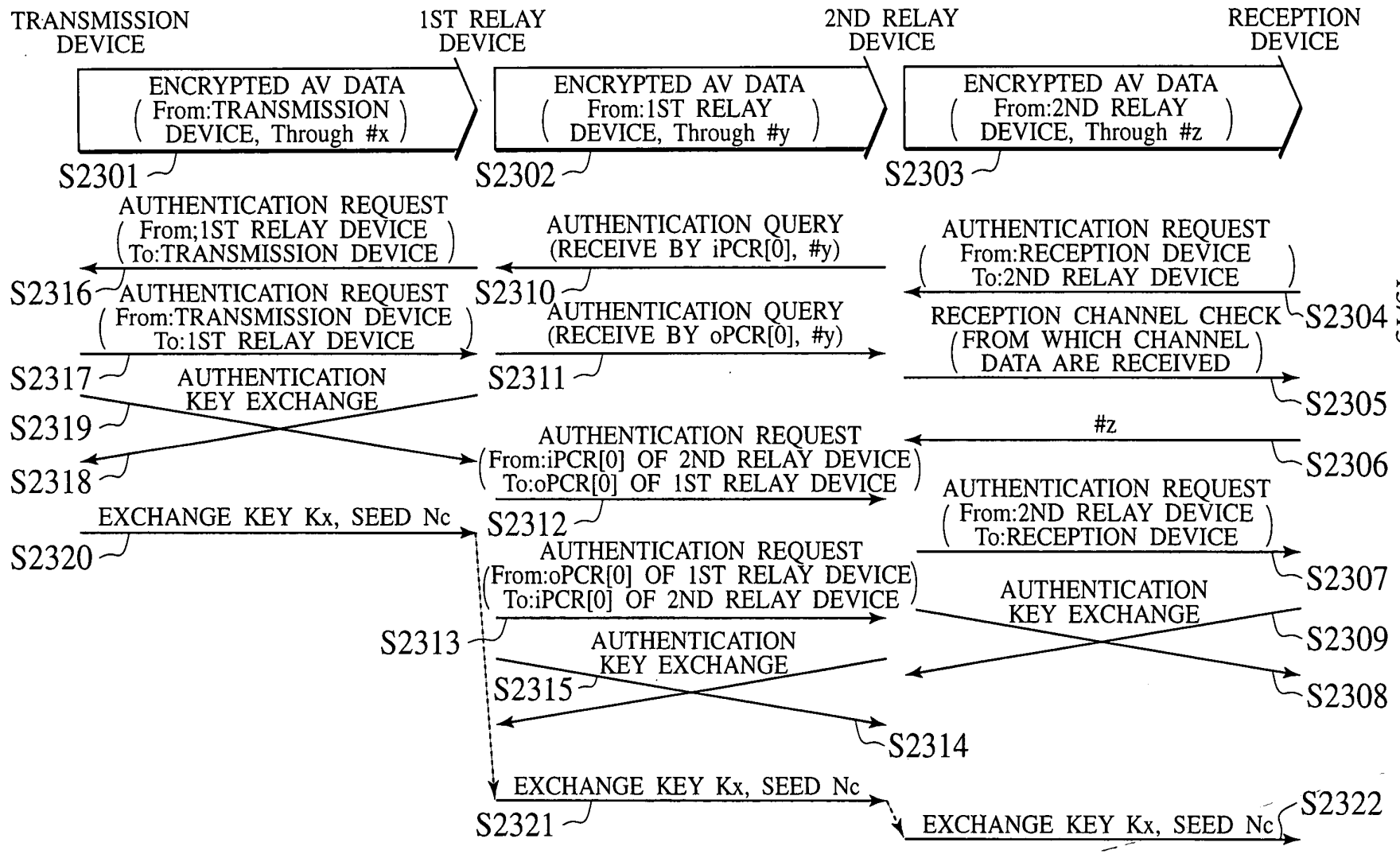
# FIG.15



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